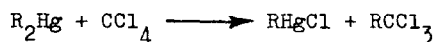


REACTIONS OF FREE RADICALS AND UNSYMMETRICAL ORGANO-MERCURIC
COMPOUNDS

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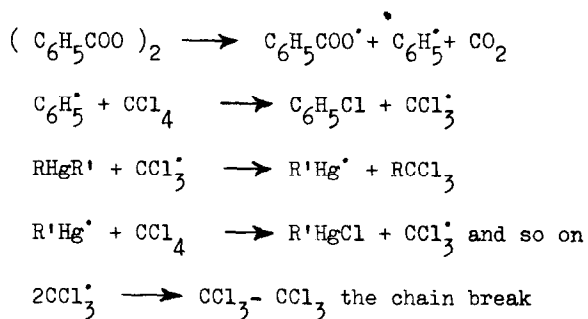
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THE benzoyl peroxide-initiated reaction of carbon tetrachloride and symmetrical organo-mercuric compounds has been reported to be as follows:¹



In the present study the homolytical exchange reaction was used between fully substituted unsymmetrical organo-mercuric compounds (prepared by the method of K.A.Kocheshkov and R.Kh.Freidlina) and compounds Nos. 1, 2 and 3, following the Grignard method.

Constants for the compounds are presented in the Table. $RHgR'$ compounds react with carbon tetrachloride in the presence of peroxide according to the scheme:



¹ A.E.Borisov, Izv.Akad.Nauk SSSR,Otdel.khim.nauk 524 (1951).

The less electronegative radical always remains attached to mercury in RHgCl^2 and the more electronegative one converts to RCCl_3 . In the case of R and R' radical characteristics close spacing, as in No.7, all four possible combinations RHgCl , R'HgCl , RCCl_3 and R'CCl_3 , result.

Thus the CCl_3^\cdot free radical attacks the same mercury attached radical, which undergoes electrophilic attack by hydrogen ions during acid decomposition of RHgR' .

No.	Original compounds	Melting points	Isolated compounds and yields (%)
1	$\text{C}_6\text{H}_5\text{HgC}_2\text{H}_5$	Oil	$\text{C}_6\text{H}_5\text{HgCl}$ (87%) + $\text{C}_6\text{H}_5\text{CCl}_3$
2	$\text{C}_6\text{H}_5\text{CH}_2\text{HgC}_4\text{H}_9$	Oil	$\text{C}_6\text{H}_5\text{CH}_2\text{HgCl}$ (73%) + $\text{C}_4\text{H}_9\text{CCl}_3$ (58%)
3	$\text{C}_6\text{H}_5\text{HgC}_4\text{H}_9$	Oil	$\text{C}_4\text{H}_9\text{HgCl}$ (76%) + $\text{C}_6\text{H}_5\text{CCl}_3$ (72%)
4	$\text{C}_6\text{H}_5\text{HgC}_6\text{H}_{11}$	59 - 61°	$\text{C}_6\text{H}_{11}\text{HgCl}$ (83%) + $\text{C}_6\text{H}_5\text{CCl}_3$ (43%)
5	$\text{C}_6\text{H}_5\text{HgCH}_2\text{C}_6\text{H}_5$	Oil	$\text{C}_6\text{H}_5\text{CH}_2\text{HgCl}$ (73%) + $\text{C}_6\text{H}_5\text{CCl}_3$ (33%)
6	$\text{C}_6\text{H}_5\text{HgC}_6\text{H}_4\text{CH}_3\text{-p}$	167 - 192°	$\text{C}_6\text{H}_5\text{HgCl}$ (88%) + $\text{p-CH}_3\text{C}_6\text{H}_4\text{CCl}_3$ (82%)
7	$\text{p-CH}_3\text{C}_6\text{H}_4\text{HgC}_6\text{H}_4\text{CH}_3\text{-o}$	159 - 189°	$\text{o-CH}_3\text{C}_6\text{H}_4\text{HgCl}$ (57%) + $\text{o-CH}_3\text{C}_6\text{H}_4\text{CCl}_3$ (40%) + $\text{p-CH}_3\text{C}_6\text{H}_4\text{HgCl}$ (43%) + $\text{p-CH}_3\text{C}_6\text{H}_4\text{CCl}_3$ (60%)
8	$\text{C}_6\text{H}_5\text{HgC}_{10}\text{H}_7\text{-}\alpha$	165 - 195°	$\text{C}_6\text{H}_5\text{HgCl}$ (73%) + $\alpha\text{-C}_{10}\text{H}_7\text{CCl}_3$ (73%)

² M.S.Kharasch and R.Marker, *J.Amer.Chem.Soc.* 48, 3130 (1926);
A.N.Nesmeyanov and K.A.Kocheshkov, *Uch.Zap.Mosk.Univ.* No.3, 283 (1934).